



*North Dakota*  
LEGENDARY



# AGRICULTURAL PRODUCTS UTILIZATION COMMISSION

GRANT REPORT 2014-2016



SUPPORTING THE DAWN OF A NEW AGE IN AGRICULTURE



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## APUC COMMISSIONERS



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*Governor's Appointee*



**BILL ONGSTAD**  
*Commissioner's Appointee*



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**DEAN BRESCIANI**  
*NDSU President*



**DOUG GOEHRING**  
*Agriculture Commissioner*



**KEITH PELTIER**  
*Governor's Appointee*

## ADMINISTRATION

The North Dakota Agricultural Products Utilization Commission (APUC) consists of nine members. The governor appoints five members to two-year terms. Three of these appointees must be actively engaged in farming and two must be actively engaged in business. The Commissioner of Agriculture appoints one member to a two-year term. This member must also be actively involved in farming. All terms begin July 1.

The board also includes three statutory members or their designees:

### PAUL LUCY, DIRECTOR

Economic Development and Finance Division,  
North Dakota Department of Commerce

### DEAN BRESCIANI, PRESIDENT

North Dakota State University

### DOUG GOEHRING, COMMISSIONER

North Dakota Department of Agriculture

## APUC STAFF



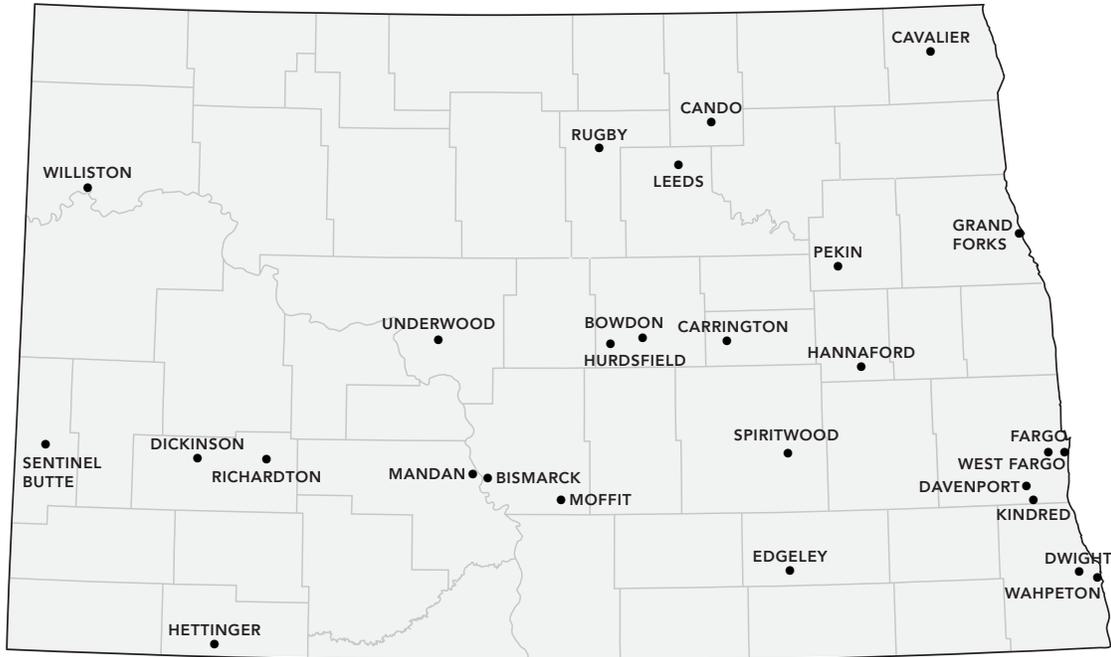
**LATOSHA PIERCE**  
*Program Assistant*



**JOHN F. SCHNEIDER**  
*Executive Director*



BETWEEN DECEMBER 2014 AND DECEMBER 2016, APUC FUNDED 57 PROJECTS IN 27 NORTH DAKOTA COMMUNITIES, TOTALING OVER \$3 MILLION IN GRANTS AND SPONSORSHIPS.



*APUC is an office within Economic Development and Finance, a division of the North Dakota Department of Commerce.*

- Bismarck - BisMan Community Food Cooperative
- Bismarck - Chateau Moravia Vineyard & Nursery
- Bismarck - LL International
- Bismarck - National Council of State Agricultural Finance Program
- Bismarck - North Dakota FFA Foundation
- Bismarck - Two Track Malting
- Bowdon - Bowdon Meat Processing Cooperative
- Cando - Bektrom Foods
- Carrington - NDSU Carrington Research Extension Center
- Carrington - Ostlie's Sunny Side Acres
- Cavalier - Pembina-Walsh Livestock Processing Plant
- Davenport - Dakota Carriage Company
- Dickinson - Fluffy Fields Vineyard & Winery
- Dwight - Richland IFC
- Edgeley - Mr. Moisture
- Fargo - 2016 Agricultural Bio-Sciences International Conference
- Fargo - 3DomFuel
- Fargo - Amity Technology
- Fargo - Anchor Ingredients
- Fargo - Dakota Specialty Milling
- Fargo - Harvest Profit
- Fargo - NDSU Department of Agribusiness and Applied Economics
- Fargo - NDSU Department of Animal Sciences
- Fargo - NDSU Department of Coatings and Polymeric Materials
- Fargo - NDSU Department of Plant Sciences
- Fargo - NDSU Department of Microbiological Sciences
- Fargo - NDSU Extension Service
- Fargo - North Dakota Soybean Processors
- Fargo - Renuvix
- Grand Forks - Field of View
- Grand Forks - Red River BioRefinery
- Hannaford - Miller Elevator
- Hettinger - Trojan Hoist Manufacturing
- Hurdsfield - TR Solutions
- Kindred - Red Barn & Berry Farm
- Leeds - Bison Compost
- Mandan - Cloverdale Foods Company
- Moffit - Travis Schweitzer
- Peekin - Prairie View Lodge
- Richardton - North Dakota Dairy Coalition
- Richardton - Todd's Honey Farm
- Rugby - Farmtastic Heritage Foods
- Sentinel Butte - Van Daele Guest Ranch & Trail Rides
- Spiritwood - Spiritwood Ingredients
- Underwood - Midwest AgEnergy Group
- Wahpeton - Altavian
- Wahpeton - GIANT Snacks
- Wahpeton - Minn-Dak Farmers Cooperative
- West Fargo - Prairie Roots Food Cooperative
- Williston - Williston Regional Economic Development Corporation



# BASIC & APPLIED RESEARCH

Basic & Applied Research Grants assist in research for processing agricultural products and by-products in North Dakota. These grants cannot be aimed at business expansion or creation without regard to agricultural products, must not include research that cannot reasonably be expected to result in a marketable product, or cannot have been duplicated by other research efforts.

## OPTIMIZING PASTEURIZATION CONDITIONS FOR FLAXSEED QUALITY AND SAFETY

NDSU Department of Plant Sciences  
Clifford Hall, Fargo

Grant Amount: \$54,183  
Total Budget: \$72,244

To ensure product safety to food manufacturers, ingredient supplies increasingly may be required to heat process a product to eliminate microorganisms. This project will focus on determining the impact of the heat processing on the shelf life of flaxseed.

## NEW POLYMERIC ADJUVANTS FOR PEPTIDE VACCINES

NDSU Department of Coatings & Polymeric Materials  
Andriy Voronov, Fargo

Grant Amount: \$ 87,792  
Total Budget: \$126,859

This project will employ an innovative inter-disciplinary approach to develop a novel next-generation vaccine against Swine Influenza Virus. The targeted methods have broad applicability to other economically important viral vaccines for farm animals, as well as human influenza.



**FIELD EVALUATION OF INTRODUCED RASPBERRY CULTIVARS FOR SMALL FRUIT PRODUCTION**

NDSU Department of Plant Sciences  
Wenhao Dai, Fargo

Grant Amount: \$30,510  
Total Budget: \$40,670

Funds will be used to hire a graduate student, purchase research supplies and pay for the cost of field trips for field evaluations for the introduction 20 raspberry cultivars that show winter hardiness to North Dakota. Three to five cultivars are expected to adapt to the environmental conditions and produce high quality fruits.

**POTENTIAL PREGNANCY TEST IN DAIRY CATTLE**

NDSU Department of Animal Sciences  
Kimberly Vonnahme, Fargo

Grant Amount: \$47,924  
Total Budget: \$73,206

Funds will be used to hire a graduate student to research and monitor the hematocrit levels of dairy heifers and cows during the estrous cycle and pregnancy for the development of an on-farm test to be designed and commercialized.

**IMPROVEMENT OF NOVEL BIOFILM INHIBITING MATERIALS & APPLICATION IN FOOD PROCESSING**

NDSU Department of Microbiological Sciences  
Birgit Pruess, Fargo

Grant Amount: \$74,787  
Total Budget: \$99,716

Research has developed a novel anti-microbial biomaterial, polyurethane impregnated with beta-phenylethylamine. Funds will be used to modify the material, making it more effective against a broader range of pathogens and to fabricate it into geometries that resemble or simulate the surfaces found in food processing applications, and support related research staff and supplies.

**CONVERTING NORTH DAKOTA AGRICULTURAL WASTE INTO HIGH-VALUE COMMERCIAL CHEMICALS**

Amity Technology  
Brian Dahl, Fargo

Grant Amount: \$162,000  
Total Budget: \$225,400

Funds will be used to construct a demonstration plant that can lead to the commercialization of a patented process which converts agricultural waste into high-value industrial chemicals. The process can also be used to convert potato waste, sunflower seed shells and flax straw into commercial chemicals.

**SCREENING OF INDUSTRIAL HEMP CULTIVARS FOR GRAIN & FIBER YIELD TO PROMOTE AG SUSTAINABILITY**

NDSU Department of Plant Sciences  
Burton Johnson, Fargo

Grant Amount: \$20,000  
Total Budget: \$26,666

Industrial hemp cultivars will be studied to aid growers in selecting cultivars that will maximize grain and fiber yields for greatest on-farm profits. Grant funds will be used to cover expenses for supplies, travel and two research specialists.

**ASSESSMENT OF DISTILLERS GRAINS AS SOURCES OF P & N TO IMPROVE WHEAT PRODUCTION**

NDSU Carrington Research Extension Center  
Jasper Teboh, Carrington

Grant Amount: \$14,567  
Total Budget: \$19,520

Phosphorus and nitrogen uptake by early season plants, like wheat, is hindered by low availability from low soil temperatures in spring and from heavy soil textures with high pH soils, thus impacting grain yields. Funding will support assessing the phosphorus and nitrogen fertilizer values of distillers grains in wheat production, and determine if it would be economical to the farmer.



## ROLE OF MATERNAL ENERGY IN BEEF COWS

NDSU Department of Animal Sciences  
Kendall Swanson, Fargo

Grant Amount: \$43,260  
Total Budget: \$62,727

Changes in nutrition of pregnant cows will be examined as to how they affect offspring outcomes through the study of maternal nutrition. This will lead to research on potential nutritional or other approaches to enhance fetal and neonatal development that has long-lasting impacts on cattle performance, health and longevity.

## SMALL UAS PRECISION AGRICULTURE

Altavian  
Thomas Rambo, Wahpeton

Grant Amount: \$58,800  
Total Budget: \$78,200

Funding will support research on the use of unmanned aerial systems (UAS) and related imaging systems in the timely identification of key growth and health factors in agricultural commodities. Funds will support costs related to UAS flights of corn, soybean, potato and dry bean fields. This activity will help develop new methods that can maximize yield and chemical applications for growers.

## COLORED CORN INGREDIENTS

Richland IFC  
Dominique Schuler, Dwight

Grant Amount: \$ 78,000  
Total Budget: \$120,000

Funding will support research on how corn flours and grits are made and applied to final food products, and support the various lab fees to test end use corn grit and flour, including but not limited to breads, pastas and chips, and nutritional testing.

## DEVELOPMENT OF LONG FIBER 3D PRINTING FILAMENT

3DomFuel  
John Schneider, Fargo

Grant Amount: \$10,894  
Total Budget: \$66,575

Funds will be used to develop a new line of natural long fiber (i.e. flax and hemp) FDM filament in partnership with c2renew. Research could provide North Dakota flax growers a new high-value market for the fiber.

## BARLEY PROTEIN CONCENTRATE

Spiritwood Ingredients  
Todd Hylden, Spiritwood

Grant Amount: \$ 52,500  
Total Budget: \$121,154

Funding will support creation of a scale-up pilot plant to enable finalized scale and equipment demands for a barley processing plant to be located in Spiritwood. The processing plant will produce high concentrate barley protein for use in the aquaculture (fish farming) industry. The remaining co-product will be used as a feedstock for ethanol production.



## APUC BASIC & APPLIED RESEARCH – NDSU DEPARTMENT OF MICROBIOLOGICAL SCIENCES

Have you ever picked up a piece of fruit at the grocery store and noticed a dull appearance or felt a sticky-like texture on its surface? If so, you have likely encountered biofilm. A biofilm is a collection of microorganisms (often bacteria), which are held together and protected by glue-like materials based on carbohydrates. This concoction enables the bacteria to survive a range of environmental stressors – like temperature and UV light – on food surfaces. It also puts the food consumer at risk for foodborne illnesses because biofilms make cleaning and processing food more difficult. Biofilms can be easily spread from conveyor belts in food processing plant to kitchen countertops and cutting boards.

The Department of Microbiological Sciences at North Dakota State University (NDSU) is researching ways to improve new biofilm inhibiting materials and applications in food processing. “The goal is to use a compound that bacteria consider a nutrient in a sufficiently large enough concentration so that it inhibits the formation of biofilm,” explains Dr. Birgit Pruess, a microbiology professor at NDSU. “We have a prototype of a polyurethane-based material that integrates our compound and that reduces biofilm amounts by a small selection of bacterial pathogens.”

These materials are being produced at the Research and Creative Activity Center and tested in the Microbiological Sciences Department. APUC funds are supporting efforts to improve the polyurethane material; funds are also used for investigating other compounds with biofilm inhibitory abilities. A major portion of the APUC funds pay for the research assistants and the Ph.D. students who work on the project.

“Altogether, the APUC funding was used to progress the research from the conceptual stage to application,” says Dr. Pruess. “We are now using the North Dakota Venture Grant to explore the commercial potential.”



# FARM DIVERSIFICATION

Farm Diversification Grants give priority to projects dealing with the diversification of a family farm to non-traditional crops, livestock, or on-farm, value-added processing of agricultural commodities. Traditional crops and livestock are generally defined as those that the North Dakota Agricultural Statistics Service maintains statistics on. The project must have the potential to create additional income for the farm unit.

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## PRODUCING LOCAL HOPS

Ostlie’s Sunny Side Acres  
Lindsay Ostlie, Carrington

Grant Amount: \$26,250  
Total Budget: \$99,528

Funds will support development of a small hops processing facility to pellet and package North Dakota grown hops. This will provide a local source of hops to the new and growing micro-brewing industry in the state and give hops growers a way to market their product and support tourism and education. A small farm store and food trailer with a restroom have already been acquired to accommodate visitors. Grant funds will be used to purchase a hops harvester, hammer mill and pellet mill.





### HONEY FARM EXPANSION

Todd's Honey Farm  
Todd Whitney, Richardton

Grant Amount: \$ 26,000  
Total Budget: \$309,110

Funds will be used for construction costs on a new building to expand operations to include further processing of raw honey product for retail sale locally. Products will include spun honey, honey sticks (including flavor), beeswax and a larger variety of raw honey packaging. The new building will provide an operation base for the business, as well as processing space and controlled climate storage space.

### CONSTRUCTION OF MEAT PROCESSING PLANT

Travis Schweitzer, Moffit

Grant Amount: \$ 26,250  
Total Budget: \$252,250

Funds will be used for equipment and construction of an on-farm, state-inspected slaughter and processing plant, capable of processing roughly 12 head per week with a focus on beef, bison, pork and lamb. The 2,600 square foot meat processing plant will prepare a variety of further processed meat products for retail sale at their facility.



## APUC FARM DIVERSIFICATION: OSTLIE'S SUNNY SIDE ACRES

Lindsay and Mike Ostlie grew up in North Dakota but moved to Colorado after college so Mike could pursue Ph.D. studies in agronomy. After finding a job opening in Carrington and returning home to North Dakota, the couple moved to a farm, planted trees and put up a high tunnel (an unheated greenhouse). Ostlie's Sunnyside Acres was born. "In the beginning there were setbacks. I struggled to figure out what I could grow that would be marketable," says Lindsay. As fans of craft beer, the couple zeroed in on growing hops. After a successful first test crop, the Ostlies began researching the feasibility of growing hops on a commercial scale.

Growing hops proved easy for the duo. It was the harvesting and handling that presented a serious challenge. "Hops are very fluffy and take up a lot of volume, so most brewers use them in pelleted form," says Lindsay. Ostlie applied for an APUC Farm Diversification Grant to help purchase a mechanical harvester and pelleting equipment. Using the mechanical harvester purchased with APUC funds, over 100 pounds of hops were harvested in half a day with just a few people. "Picking that amount by hand probably would have taken 20 people two days," says Lindsay.

The investment in equipment is already paying off: Fargo Brewing purchased most of the 2016 crop. "The rest of our crop we dried and pelleted and there are a lot of breweries and home brewers interested in purchasing it," says Lindsay. "We probably never would have planted half an acre of hops without the ability to process it, which APUC helped make possible."

The Ostlies are enthusiastic about what lies ahead. "Hopefully, we are helping to build a foundation for a hops industry in North Dakota and a bright future for our farm," says Lindsay.

# MARKETING & UTILIZATION

Marketing & Utilization Grants provide necessary assistance to the research and marketing needs of the state by developing new uses for agricultural products and by-products, and by seeking efficient systems for processing and marketing these products. These grants are also used to promote efforts that increase productivity, provide added value to agricultural products, stimulate and foster agricultural diversification and encourage processing innovations.

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## MARKETING OF NOVEL BIOBASED RESINS

Renuvix  
Dean Webster, Fargo

Grant Amount: \$59,250  
Total Budget: \$88,050

Funds will be used in the creation of marketing materials, a trade show booth and attendance at six trade shows to promote initial line of products: sucrose soyate, epoxidized soyate, and acrylated epoxidized sucrose soyate.

## VINEYARD & WINERY FEASIBILITY & MARKET STUDY

Fluffy Fields Vineyard & Winery  
Deb Kinzel, Dickinson

Grant Amount: \$60,952  
Total Budget: \$81,577

Facility will be expanding crop production to a full-service winery to promote locally bottled wine, tourism and events. Funds will be used to complete a market analysis and feasibility study to determine market position, penetration, segments (wine, tourism, farmers market, other), consumer characteristics and buying habits, and pricing strategies. Funds will also support development of a marketing plan and defray costs associated with the business concept development.



### GIANT SNACKS

Robert Schuler, Wahpeton

Grant Amount: \$152,000  
 Total Budget: \$329,000

Funds will be used to expand marketing efforts of new products and grow them into new territories including California, Texas and Mexico. Funds will also support advertising, sampling and general costs associated with setting up new accounts and marketing of a low sodium, innovative new roast into the marketplace.

### PEMBINA-WALSH LIVESTOCK PROCESSING PLANT

Julius Wangler, Cavalier

Grant Amount: \$35,878  
 Total Budget: \$53,170

Funds will support the construction, design and equipment for the establishment of a multi-species slaughter and processing facility. The facility will provide custom meat processing services to area livestock producers and plant-processed meat products to the public.

### BOWDON MEAT PROCESSING COOPERATIVE

Robert Martin, Bowdon

Grant Amount: \$16,380  
 Total Budget: \$28,380

Funds will be used for the implementation of market strategy and a refrigerated trailer to allow the company to reach out to customers. Strategy will be developed to help diversify the operation beyond custom slaughter and to increase their customer base for a consistent, year-round market.

### TWO-TRACK MALTING

Jared Stober, Bismarck

Grant Amount: \$ 72,270  
 Total Budget: \$102,270

Funding will support research, product development and a marketing analysis to start a craft malting company in North Dakota in close proximity to where barley is grown in order to serve the fast growing craft brewing market. They will provide added value for North Dakota grown barley and provide craft brewers with high-quality ingredients.

### BISON COMPOST

Tom Duenow, Leeds

Grant Amount: \$135,100  
 Total Budget: \$185,100

Funds will be used to develop a comprehensive marketing plan and redesigned branded identity for a North Dakota based bison manure compost business. Funds will also be used to create a detailed business plan, including marketing plan with forward growth projections in potential consumer base, product utilization, jobs creation, and for advertising and promotions.

### PRAIRIE ROOTS FOOD COOPERATIVE

Tim Mathern, West Fargo

Grant Amount: \$57,500  
 Total Budget: \$78,160

Funds will be used to recruit a general manager to a full-line, retail food co-op in Fargo featuring food from local farmers. A co-op design and marketing consultant will ensure that the store has the right look and feel to celebrate the agricultural heritage and farmers.



**DAKOTA SPECIALTY MILLING**

Bryan Hendricks, Fargo

Grant Amount: \$200,000  
 Total Budget: \$400,000

Funds will assist in marketing as the company expands production capacity. Support will include sales and marketing of current and new products; preliminary research and pre-construction requirements to expand production facilities; and architectural design, pre-engineering, soil testing, permitting, legal and capital raise.

**BEKTROM FOODS**

Shannon Erickson, Cando

Grant Amount: \$200,000  
 Total Budget: \$250,000

Funds will be used for a Safe Quality Foods audit to maintain and seek new customers, attend events and sales training, maintain equipment, and develop new products and label designs.

**BISMAN COMMUNITY FOOD COOPERATIVE**

Angie Oberg, Bismarck

Grant Amount: \$ 52,416  
 Total Budget: \$124,970

Funds will be used to establish and build new vendor agreements with small to mid-sized farmers, implement marketing to continue to grow membership numbers and build co-op awareness and educational programming within the store.

**NORTH DAKOTA COMMODITIES**

LL International  
 Larry White, Bismarck

Grant Amount: \$ 5,250  
 Total Budget: \$10,250

Funds will help identify markets for North Dakota commodities such as oilseeds, oils and pulse crops. It will also introduce new specialty crop products and uses for foreign markets.

**CHATEAU MORAVIA VINEYARD & NURSERY**

Tereza Kozubikova, Bismarck

Grant Amount: \$119,500  
 Total Budget: \$156,000

Funds will be used to help launch the state's first cold-weather hearty grapevine nursery by providing marketing and feasibility studies, and expansion of trellis and irrigation systems. Once the nursery business is established, the owners plan to build and operate a working winery and event center.

**NORTH DAKOTA DAIRY COALITION**

Jennifer Holle, Richardton

Grant Amount \$ 82,000  
 Total Budget: \$122,000

Funds will be used to conduct a study to help identify strategies needed to expand milk production and recruit a milk processing facility to the region. This is a comprehensive project that will define opportunities for dairy development in the Dakotas and begins to chart a course toward attracting additional processing investments.

**MILLER ULTIMATE FEEDS**

Miller Elevator Co.  
 Randy Miller, Hannaford

Grant Amount: \$47,250  
 Total Budget: \$62,250

Funds will be used to support market and product development for a feed mixing and pelleting factory, particularly novel feeding solutions for supplementing low-quality forages and feedstocks, along with promotional materials and development of point-of-sales for producers in the area.



### MINN-DAK FARMERS COOPERATIVE

Allen Larson, Wahpeton

Grant Amount: \$118,000  
Total Budget: \$338,000

Funds will be used to help support marketing and utilization of new products created during the processing of sugar beets, including a new soil ammendment product.

### ANCHOR INGREDIENTS

Seth Novak, Fargo

Grant Amount: \$ 90,500  
Total Budget: \$228,000

Funds will be used for the marketing of organic and conventional commodities that are supplied to leading food manufacturers with the goal of expanding the customer base.

### NORTH DAKOTA SOYBEAN PROCESSORS

Levi Taylor, Fargo

Grant Amount: \$103,000  
Total Budget: \$250,000

Funds will be used to assist with preliminary engineering services for a soybean crushing facility being built near Jamestown. The plant would be an integrated soybean crush facility and refinery that would produce and sell soybean meal and refined, bleached, and deodorized oil biodiesel.

### DAKOTA SPECIALTY MILLING

Bryan Hendricks, Fargo

Grant Amount: \$ 82,300  
Total Budget: \$707,500

Funds will be used to help expand domestic and international sales and marketing activities by analyzing ways to increase the amount of raw materials grown in North Dakota.

### 2016 AGRICULTURAL BIO-SCIENCES INTERNATIONAL CONFERENCE

Roger Reiersen, Fargo

Grant Amount: \$ 26,250  
Total Budget: \$777,000

Funds will be used to support marketing and educational efforts for the conference held in Fargo, North Dakota, September 18-21, 2016. The conference is a premier global meeting promoting innovation in bioscience to ensure sustainable food, feed and fiber security.

### FLUFFY FIELDS VINEYARD & WINERY

Deb Kinzel, Dickinson

Grant Amount: \$ 59,584  
Total Budget: \$115,043

Funds will be used to support a comprehensive marketing campaign designed to increase visitors, revenues and lean evaluation of production practices. The winery and vineyard offer tours, wine tastings, event space, by the glass bottle or case wine, and features other North Dakota wines and beer by the glass.

### RED RIVER BIOREFINERY

Keshav Rajpal, Grand Forks

Grant Amount: \$ 84,000  
Total Budget: \$853,750

Funds will be used to complete the engineering phase of a small scale, value-added biorefinery focused on producing low-cost, advanced and cellulosic ethanol. This will allow the facility to complete fundraising and start building the plant.



## **APUC MARKETING AND UTILIZATION: DAKOTA SPECIALTY MILLING**

Dakota Specialty Milling (DSM) has a long-standing history in North Dakota: the family-owned company has been milling grain in Fargo since 1968. Due to high demand, Dakota Specialty Milling had expanded to four locations in Fargo, including two mill towers, a gluten-free production facility and a warehouse. In fact, demand was so strong that DSM's production capacity at its current locations had reached a peak, compelling the company to evaluate whether it should purchase additional mills elsewhere or build a new mill locally or expand the scope of production at current facilities.

“After much consideration and analysis we concluded it is more feasible to increase our current plant capacity in Fargo ... and to replace [existing] equipment with new, high capacity and more efficient equipment,” explains Bryan Hendricks, vice president and chief financial officer at DSM. “The new equipment will increase our production capacity from 200% to 300%.” APUC grant money was used to offset some of the engineering costs involved with designing the new equipment, plant layouts and structural analysis.

APUC funds were also used to fund marketing and advertising costs in efforts to promote DSM's new production space and boost sales. The project is underway and will be completed in several rolling phases through March 2017.

“We will install one new line and remove an old line to make room for the next phase of equipment ... we expect to complete the project with very little down time,” says Hendricks. “This project would not have moved along as quickly without the support and guidance of APUC personnel and other state agencies.”



# NATURE-BASED TOURISM

Nature-Based AgriTourism Grants are for enterprises which seek to attract visitors to a working farm or ranch, or any agricultural, horticultural or agribusiness operation to enjoy, be educated or be involved in activities. Eligible projects include but are not limited to farm or ranch tours, hands-on chores, self-harvesting of produce, hunting operations, fishing operations located on applicants' land, bird watching, trail rides and corn mazes.

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## RED BARN WEDDINGS

Red Barn & Berry Farm  
Chris Gehrig, Kindred

Grant Amount: \$26,250  
Total Budget: \$51,250

Funds will defray costs to build an addition to the barn for bathrooms, and bride and groom rooms. Completion of this phase will enable the facility to host summer and early fall weddings and to market a new amenity, important to raspberry and produce customers.

## FARMTASTIC FOOD HUB

Farmtastic Heritage Foods  
Mirek Petrovic, Rugby

Grant Amount: \$53,445  
Total Budget: \$76,138

Funds will be used to rehab space on the first floor of the food hub building for a certified commercial kitchen, and to purchase and install the equipment. The commercial kitchen will be rented to local growers to process products for sale.



### PRAIRIE VIEW LODGE

Chris Ahl, Pekin

Grant Amount: \$26,250  
 Total Budget: \$34,500

Funds will be used to make remodeling updates to the facility, as well as provide marketing resources. The Prairie View Lodge provides lodging, professional hunting, fishing, birding, hiking, kayaking, dog boarding and grooming.

### DAKOTA CARRIAGE COMPANY

Sari Kraft, Davenport

Grant Amount: \$26,250  
 Total Budget: \$66,250

Funds will be used to expand the existing facility, including agricultural education, events and additional visitor options. With the expansion, the season can be extended into winter by offering sleigh rides and farm tours during the winter months.

### VAN DAELE GUEST RANCH & TRAIL RIDES

Lana Maychrzak, Sentinel Butte

Grant Amount: \$29,925  
 Total Budget: \$44,925

Funds will be used to expand the facility to include guest lodges, a shower house, infrastructure, and renovation of existing common area structure. The ranch offers opportunities for tourists to experience ranch life in one of the most unique and scenic locations in the region.

## APUC NATURE-BASED TOURISM: PRAIRIE VIEW LODGE

Since he was eleven years old, Chris Ahl has dreamed of owning the Prairie View Lodge. The property is based in rural Pekin and is ideally situated for popular North Dakota outdoor past-times. Visitors to the area enjoy activities like hunting, fishing and bird-watching or, in the colder months, cross-country skiing, ice fishing and snowmobiling. World-class fishing on Devils Lake is less than an hour drive and hunters can explore Cheyenne River Valley’s rolling landscape in pursuit of upland birds and waterfowl. Pekin’s art scene draws travelers to the area as well. Ahl intends for Prairie View Lodge to cater to this wide range of tourists, as well as to wedding parties, anniversary gatherings and reunions.

“It always blew my mind that one could make money by serving others in the hospitality industry,” Ahl explains. “I’ve lived in Pekin for 19 years and [I know] that it won’t take much to turn Prairie View Lodge into an all-around vacation paradise.” Ahl is currently in the process of purchasing the eight-room lodge and plans to use APUC grant funds for marketing and remodeling. Occupancy rates are around 33 percent today, and Ahl hopes that a facelift and advertising can boost rates closer to 50 percent.

“The APUC grant funds will go to some marketing but [mostly] to landscaping and an overall facelift of furnishings like furniture, bedding, countertops, windows and maybe some vending machines,” says Ahl. “It needs a lobby and we’ll use funds to make one of the rooms into a welcome area, something the building definitely needs.”



# PROTOTYPE

APUC provides grants in two areas of agricultural innovations: Prototype Development & Technology Grants. A huge array of equipment can be useful in conducting business in rural living and agricultural economics. Prototype Grants are restricted to inventions improving the operations of food processing equipment and agricultural equipment. Technology Grants are to encourage innovation and APUC maintains a broad view of technology, such as hardware, software, devices or processes. Biotechnology will be considered as long as those advances improve agricultural product utilization as food, feeds, fuels and fiber.

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## TROJAN HOIST COMPANY

Trojan Hoist Manufacturing  
Scott Thompson, Hettinger

Grant Amount: \$25,000  
Total Budget: \$50,000

Funds will be used to develop and test a portable AG Lift, produce several prototypes for destructive and non-destructive testing, and end-user evaluation. Ergonomic and safety features, and insert adapters will be designed and tested.

## AERIAL THERMAL MAPPING PAYLOAD

Field of View  
David Dvorak, Grand Forks

Grant Amount: \$18,080  
Total Budget: \$35,300

Funds will be used to purchase equipment and components that are necessary to develop and build a thermal mapping payload. Aerial thermal imagery can be extremely useful in a variety of agriculture applications including identifying areas of water stress and livestock management.



## THE MUD RX WEAR COMPENSATOR

TR Solutions  
Robin Weisz, Hurdsfield

Grant Amount: \$25,500  
Total Budget: \$61,500

Funds will help in the development of a product that offers mud scraping ability with very little wear, eliminating the need for tire replacement on planters and single disc air drills. Funds will be used to make additional 3-D printed prototypes, design and purchase of compression molds and payment for legal fees to file patent applications and form a corporation.

## APUC PROTOTYPING GRANT: FIELD OF VIEW

When he was an undergraduate in the University of North Dakota's mechanical engineering program, David Dvorak gained exposure to flying unmanned aircraft and putting together camera systems. He was also introduced to the concept of precision agriculture and the ways farmers can make better management decisions based off imagery from satellites as well as manned and unmanned aircraft. It was a concept that both intrigued and inspired him. In 2010, while still in graduate school, Dvorak started Field of View with fellow engineering students to supply both the expertise and the components needed for precise unmanned and manned aircraft based aerial imaging.

Initially, Field of View planned to do flight services with unmanned and manned aircraft systems. But due to federal regulatory delays, the company changed direction toward equipment sales. "We chose to focus more on technology development and helping other people get up and going in aerial mapping for both manned and unmanned aircraft," explains Dvorak, CEO. "We sell camera systems and image processing and imaging software that takes individual images and turns them into a seamless map." The company also develops custom payloads and combines different camera systems and different GPS systems.

APUC grant funds were used to purchase the equipment and components necessary to build a thermal mapping payload that can locate the camera's position down to a few centimeters. "This is a valuable [tool] because you can produce a map product that is accurate down to that level which allows for automation in the processing," explains Dvorak. "The other unique aspect of aerial thermal imagery is that utilizing the thermal sensor means you can identify livestock or detect different types of anomalies in agriculture."

"We really like working with the APUC Commission," says Dvorak. "The grant is a valuable resource for our company because it allows us to buy the equipment we need so we can prototype a unique and complex piece of technology. Our ultimate goal is to provide this technology to help North Dakota's agricultural sector."



# TECHNICAL ASSISTANCE

## BUILDING MANUFACTURING CAPACITY & EFFICIENCY

Dakota Specialty Milling  
Bryan Hendricks, Fargo

Grant Amount: \$25,226  
Total Budget: \$36,960

Funds will be used to determine actual manufacturing capacity, factors limiting capacity, and steps needed to optimize manufacturing efficiencies.

## IMPROVING EMPLOYMENT PROCESSES & PRACTICES

Cloverdale Foods Company  
Sam Towner, Mandan

Grant Amount: \$24,499.65  
Total Budget: \$36,166.65

Funds will help evaluate current employment processes, align human resources responsibilities with current goals and objectives, and develop more effective employment processes to achieve those goals. This includes improving their recruitment, selection, orientation, and retention practices, and investing in the development and full engagement of their workforce at all levels.

## RELIABILITY CENTERED MAINTENANCE TRAINING

Midwest AgEnergy Group  
Adam Dunlop, Underwood

Grant Amount: \$ 7,699  
Total Budget: \$11,366

Funds will be used to enhance equipment awareness and maintenance skills resulting in minimized plant downtime and unpredicted equipment failures.





## APUC TECHNICAL ASSISTANCE: MIDWEST AGENERGY GROUP

Midwest AgEnergy Group (MAG) is a North Dakota biofuels enterprise that owns the BlueFlint Ethanol and Dakota Spirit AgEnergy biorefineries. Each refinery produces, respectively, over 65 million gallons of ethanol annually with the multi-million bushels of corn they purchase from North Dakota farmers. Both refineries are located within close proximity to lignite coal power plants so that they can utilize the waste steam from those stations to provide processing energy to make ethanol, as well as to dry distiller grains. It's a sophisticated, and potentially complicated, process. It's particularly problematic if and when machinery is not functioning at its full capacity.

The two MAG biorefineries used an APUC Technical Assistance Grant to fund reliability-centered maintenance training. "At Blue Flint Ethanol and Dakota Spirit AgEnergy, we recognize that increased plant on-stream time for our processes and equipment is critical to the success of our business and a core value at MAG is a culture of continuous improvement," says Adam Dunlop, director of regulatory and technical services. "Plant availability can be increased through enhancing the skills/knowledge of our plant employees to better perform preventative and predictive maintenance, and we wanted to educate operators to understand how the equipment works, not just what it does."

Operations team members participated in a one-day training session focused on mechanical knowledge to improve equipment familiarity amongst the staff. Maintenance employees participated in a two-day training event designed to arm them with the latest training information of rotating equipment, lubrication for electric motor bearings, and pump rebuilding and repair.

"The gained mechanical knowledge will pay dividends through additional production resulting from greater equipment familiarity," Dunlop says.

"The [maintenance] categories comprise much of the critical plant equipment so [that] additional knowledge will have immediate impact to the business based on the frequency of repairs on these equipment types."

Dunlop believes that the training objectives were accomplished. He explains: "North Dakota has a great technical assistance grant program administered by APUC and it has enabled MAG to use training opportunities that we may not otherwise have been able to pursue."



# TECHNOLOGY

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## MR. MOISTURE

Nick Mathern, Edgeley

Grant Amount: \$14,700

Total Budget: \$28,700

Funds will be used to seek needed patent and copyrights, as well as provide for marketing and travel expenses to promote a product that will test moisture levels in cereal grains via a mobile app and reader. The proposed system is comprised of a novel reader and a mobile application. The device will calculate and display the amount of moisture, as well as temperature of grain.

## FARM FINANCE & RISK MANAGEMENT SOFTWARE PACKAGE

Harvest Profit

Nick Horob, Fargo

Grant Amount: \$13,125

Total Budget: \$25,625

Grant funds will be used to further develop a suite of software tools that will allow farmers to track field-by-field profitability, monitor input expenses, built profit-based risk management plans, and conduct what-if profitability analysis. Funds will also support exploring marketability of the product.



## APUC TECHNOLOGY – HARVEST PROFIT

When he was working as a farm business consultant for farms in North Dakota and Minnesota, Nick Horob identified a need for new technology in agriculture. “I saw that there was a lack of farm business tools and that’s where I came up with the idea to build a set of web-based farm business software,” Horob said.

Horob’s idea was the foundation for his company Harvest Profit, which is now just over a year old. His experience consulting with farmers guided Harvest Profit’s purpose: build easy-to-use, intuitive software tools to help farmers make profit-focused and objective business decisions to build a higher net-worth in a volatile farm economy.

“Farm commodity prices change on a daily basis so ... it can be an emotional rollercoaster for farmers,” says Horob. “Intuitive software tools [allow] farmers to track their profitability ... so instead of focusing on how to produce more yield per acre our goal is to help farmers analyze and make better decisions on how to produce more profitability per acre.”

Harvest Profit used APUC grant funds to build a suite of software tools to allow users to track field-by-field profitability, monitor input expenses, build profit-based risk management plans and conduct what-if probability analysis. Horob hired Fargo-based software development firm Codelation to refine features in the suite. The grant was also used for marketing efforts, primarily on Facebook.

“The APUC grants really help entrepreneurs and are a valuable way to continue to support one of North Dakota’s strongest economic drivers – agriculture,” Horob says. “The state is taking a long-term view and enabling businesses and entrepreneurs to take on risk and new ventures.”



# SPONSORSHIP

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## RURAL LEADERSHIP NORTH DAKOTA SPONSORSHIP

NDSU Extension Service  
Marie Hvidsten, Fargo

Sponsorship: \$500

Sponsorship supports Rural Leadership North Dakota, a statewide leadership development program that unites people across North Dakota who are committed to strengthening their communities.

## NORTH DAKOTA FFA FOUNDATION

Beth Bakke Stenehjem, Bismarck

Sponsorship: \$1,000

Sponsorship supports the Ag Processing Proficiency awards and travel stipends for proficiency finalists to attend the National FFA Convention.

## WILLISTON REGIONAL ECONOMIC DEVELOPMENT CORPORATION

Ann Kvande, Williston

Sponsorship: \$1,000

Sponsorship supports the NDSU Williston Research Extension Center Field Day and the Mon-Dak Ag Showcase.

## NATIONAL COUNCIL OF STATE AGRICULTURAL FINANCE PROGRAM

Anette Curl, Bismarck

Sponsorship: \$1,000

The sponsorship supports efforts to educate private organizations and governments on North Dakota's robust agricultural sector, as well as the challenges and opportunities presented by growing energy development.

## NORTH DAKOTA FFA FOUNDATION

Beth Bakke Stenehjem, Bismarck

Sponsorship: \$300

Sponsorship supports the National FFA Organization Proficiency Award for Value-Added Processing.



## APUC SPONSORSHIP: NATIONAL COUNCIL OF STATE AGRICULTURAL FINANCE PROGRAM

The National Council of State Agricultural Finance Programs (NCOSAFP) is a consortium of agricultural financing entities that collaborate to provide national representation for states operating finance programs for farmers, ranchers and the agricultural industry.

“The Council provides information about state programs on farm finance issues and legislation developing in Washington, D.C.,” explains Annette Curl, who serves on the Council’s Board of Directors. “NCOSAFP is also involved in the promotion and support of rural economic development programs.”

North Dakota hosted the 2015 Annual NCOSAFP Conference in Medora and APUC committed to the event’s Platinum Sponsorship Level. The two-day conference consisted of presentations by local leaders and business owners, and tours of nearby farms, an oil rail loading facility and the Dakota Prairie Refinery. The activities showcased North Dakota’s robust agricultural, energy and tourism sectors.

“APUC funds supported a conference that highlighted the state’s economy and to inform attendees about [our] diverse agriculture, tourism and energy industries and how they contribute to the state’s economic prosperity,” says Curl. The conference also highlighted the ways that North Dakota has created unique export opportunities for its goods.



# FUNDING SOURCES



APUC’s appropriation for the 2015-2017 biennium totaled \$5,819,075 and was provided from the following sources:

- Up to \$2,095,628 was authorized to be collected from the APUC Special Funds, funded by the North Dakota Mill and Elevator.
- \$1,222,983 was appropriated directly from the state general fund.
- At the beginning of the biennium an additional \$2,500,467 was authorized as carry-over authority from the previous biennium.

## Financials as of September 30, 2015

	Expenditures	Budgeted
Salaries & Benefits	\$ 234,356	\$ 234,666
Operating Expenses	\$ 51,048	\$ 65,198
Grant Commitments *	\$3,140,344	\$3,337,059
<b>Total Expenditures</b>	<b>\$3,425,748</b>	<b>\$3,636,923</b>

**Remaining Appropriation: \$ 2,393,330**

*\* Includes current plus carry-over commitments*



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## **Agricultural Products Utilization Commission**

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